

WHAT IS CLAIMED IS:

1. A transmitter comprising:
  - 5       - a modulator providing a phase-modulated constant-envelope radio-frequency signal;
  - a dividing unit dividing a signal provided by said modulator into a first signal and a second signal which are identical to each other;
  - 10       - a first processing branch for processing a respective first signal provided by said dividing unit, said first processing branch comprising a first phase shifter and a first power amplifier connected to each other in series;
  - 15       - a second processing branch for processing a respective second signal provided by said dividing unit, said second processing branch comprising a second phase shifter and a second power amplifier connected to each other in series;
  - 20       - a combining unit combining signals provided by said first and said second processing branch;
  - a first control arrangement for controlling the power of a signal output by said combining unit at least for higher power levels by controlling the amplifications applied by said first power  
25       amplifier and by said second power amplifier to a respectively received signal; and
  - 30       - a second control arrangement for controlling the power of a signal output by said combining unit at least for lower power levels by controlling the phase shifts applied by said first phase shifter and by said second phase shifter to a respectively received signal.

2. The transmitter according to claim 1, wherein said  
first control arrangement controls said  
amplifications applied by said first power amplifier  
and by said second power amplifier to a respectively  
received signal based on a required amplitude  
modulation of said output signal and on a power level  
required for said output signal.

3. The transmitter according to claim 1, wherein said  
first control arrangement comprises a control signal  
generating unit, a power source and a linear  
regulator, said control signal representing a required  
amplitude modulation of said output signal, said  
power level required for said output signal, said  
linear regulator regulating a voltage supplied by  
said power source according to a control signal  
received from said control signal generating unit,  
and said linear regulator providing the same  
resulting voltage to a power supply input of said  
first power amplifier and to a power supply input of  
said second power amplifier for controlling the  
amplifications applied by said first power amplifier  
and by said second power amplifier.

4. The transmitter according to claim 1, wherein said  
first control arrangement comprises a control signal  
generating unit, a power source, a first linear  
regulator, a second linear regulator and a summing  
unit, said control signal representing a required amplitude  
modulation of said output signal and a power level  
required for said output signal, said summing unit  
summing a control signal provided by said control

signal generating unit and an additional amplitude  
correction control signal, said first linear  
regulator regulating a voltage supplied by said power  
source according to a control signal received from  
5 said control signal generating unit and providing the  
resulting voltage to a power supply input of said  
first power amplifier for controlling the  
amplification applied by said first power amplifier,  
and said second linear regulator regulating a voltage  
10 supplied by said power supply unit according to a  
control signal received from said summing unit and  
providing the resulting voltage to a power supply  
input of said second power amplifier for controlling  
the amplification applied by said second power  
15 amplifier.

5. The transmitter according to claim 4, wherein said  
additional amplitude correction control signal is set  
to a constant value.

20 6. The transmitter according to claim 4, wherein said  
additional amplitude correction control signal is  
continuously adjusted according to a measured  
difference in amplitude between a signal output by  
said first processing branch and a signal output by  
25 said second processing branch.

7. The transmitter according to claim 1, wherein said  
second control arrangement controls said phase shifts  
30 applied by said first phase shifter and by said  
second phase shifter to a respectively received  
signal based on a required amplitude modulation of  
said output signal and on a power level required for  
said output signal.

8. The transmitter according to claim 1, wherein said second control arrangement comprises a control signal generating unit, a converting unit and an inverting unit, said control signal generating unit generating a control signal representing a required amplitude modulation of said output signal and a power level required for said output signal and said converting unit converting a control signal provided by said control signal generating unit into a phase control signal representing a corresponding phase, wherein said phase control signal is provided to a control input of said first phase shifter and via said inverter inverting said phase control signal to a control input of said second phase shifter.
9. The transmitter according to claim 8, further comprising a summing unit for summing a signal output by said inverter and an additional phase correction control signal, wherein only the resulting summed signal is provided to said control input of said second phase shifter.
10. The transmitter according to claim 9, wherein said additional phase correction control signal is set to a constant value.
11. The transmitter according to claim 9, wherein said additional phase correction control signal is continuously adjusted according to a measured difference in an absolute phase shift between a phase of a signal output by said modulator and a signal output by said first processing branch on the one hand and between said phase of said signal output by

said modulator and a signal output by said second processing branch on the other hand.

12. The transmitter according to claim 1, said  
5 transmitter being an envelope elimination and restoration transmitter.
13. A method of controlling the power level of a signal output by a transmitter, said method comprising:
- 10 - dividing a provided phase-modulated constant-envelope radio-frequency signal into a first signal and a second signal which are identical to each other;
- controlling the power level of an output signal of  
15 said transmitter at least in case of higher required power levels by controlling amplifications applied separately to said first signal and to said second signal; and
- 20 - controlling the power level of an output signal of said transmitter at least in case of lower required power levels by controlling phase shifts applied separately to said first signal and to said second signal; and
- 25 - combining said processed first signal and said processed second signal and providing said combined signal as a power controlled output signal.
14. The method according to claim 13, wherein said  
30 amplifications, which are applied separately to said first and said second signal, are controlled based on a required amplitude modulation of said output signal and on a power level required for said output signal.

15. The method according to claim 13, wherein controlling the power level of an output signal of said transmitter by controlling amplifications applied separately to said first signal and to said second  
5 signal comprises:
- generating a control signal representing a required amplitude modulation of said output signal and a power level required for said output signal;
  - 10 - regulating an available voltage according to said control signal; and
  - controlling said amplifications by providing the same regulated voltage as power supply to a first power amplifier amplifying said first signal and  
15 to a second power amplifier amplifying said second signal.
16. The method according to claim 13, wherein controlling the power level of an output signal of said  
20 transmitter by controlling amplifications applied separately to said first signal and to said second signal comprises:
- generating a control signal representing a required amplitude modulation of said output  
25 signal and a power level required for said output signal;
  - regulating an available voltage according to said control signal to obtain a first regulated voltage;
  - 30 - controlling an amplification applied to said first signal by providing said first regulated voltage as power supply to a first power amplifier amplifying said first signal;

- summing said control signal and an additional amplitude correction control signal;
  - regulating an available voltage according to said summed signal to obtain a second regulated voltage; and
  - controlling an amplification applied to said second signal by providing said second regulated voltage as power supply to a second power amplifier amplifying said second signal.
17. The method according to claim 16, wherein said additional amplitude correction control signal is set to a constant value.
18. The method according to claim 16, wherein said additional amplitude correction control signal is continuously adjusted according to a measured difference in amplitude between said processed first signal provided for combining and said processed second signal provided for combining.
19. The method according to claim 13, wherein said phase shifts, which are applied separately to said first and said second signal, are controlled based on a required amplitude modulation of said output signal and on a power level required for said output signal.
20. The method according to claim 13, wherein controlling the power level of an output signal of said transmitter by controlling phase shifts applied separately to said first signal and to said second signal comprises:
- generating a control signal representing a required amplitude modulation of said output

- signal and a power level required for said output signal;
- converting said control signal into a phase control signal representing a corresponding phase;
  - 5    - providing said phase control signal to a control input of a first phase shifter shifting said first signal in phase according to a signal provided to its control input; and
  - 10   - inverting said phase control signal and providing said inverted phase control signal to a control input of a second phase shifter shifting said second signal in phase according to a signal provided to its control input.
- 15   21. The method according to claim 20, further comprising summing said inverted phase control signal and an additional phase correction control signal, and providing only the resulting summed signal to said control input of said second phase shifter.
- 20   22. The method according to claim 21, wherein said additional phase correction control signal is set to a constant value.
- 25   23. The method according to claim 21, wherein said additional phase correction control signal is continuously adjusted according to a measured difference in an absolute phase shift between a phase of said provided phase-modulated constant-envelope
- 30   radio-frequency signal and said processed first signal provided for combining on the one hand and between said phase of said provided phase-modulated constant-envelope radio-frequency signal and said